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OUR BARREN LANDS.

—THE—

INTERIOR OF THE UNITED STATES

West of the 100th Meridian, and East of the Sierra Nevadas.

—BY—

Gen'l W. B. HAZEN,

Col. 6th Infantry U. S. Army.

CINCINNATI:
ROBERT CLARKE & COMPANY, PRINTERS.
1875.

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OUR BARREN LANDS.

FORT BUFORD, DAKOTA TERRITORY,
January, 1875.

THE region of country, about which this paper is written, lies between the 100th meridian on the east, the Sierra Nevada Mountains on the west, with British America for its northern border, and Mexico on the south. It is a vast section of country, thousands of miles in extent. These wide plains, mountains, and valleys, for many years, have been the subject, sometimes of romantic interest, always of more or less of mystery, and later of various speculations.

The early maps condemned it, for the most part, as an arid desert, and the adventurous traveler who wandered beyond the line of civilization, was warned, that even should he not encounter the savage Indians, hunger and thirst and death accompanied his every step.

Until the discovery of gold on the Pacific coast, very few civilized men were so hardy as to venture across this land, known only as desolate. And when expeditions were undertaken—like those of Lewis and Clarke, in the beginning of the century, and, later, of Fremont and others—the explorers who escaped those dangers, and told of their discoveries, gained world-wide celebrity. When that illusive struggle for wealth, in the search for gold, began, thousands of men attempted that perilous passage across the plains. In the following years, a ghastly spectacle of bleaching bones of men and animals marked a roadway from the settlements to the mountains. The burning sun cracked and parched the earth; the merciless snow-storms, the arctic cold, did a work of death whose story has never yet been told.

With the continued discoveries of gold and silver in the Rocky Mountains, and the immense immigration to the Pacific coast, came the demand for more expeditious and more frequent means of communication. Railroads were exploited in many directions across the border. Some of these were justified by commerce—more were cheating schemes for the purpose of getting subsidies of land from the United States. Once in possession of this land, every effort, honest and dishonest, was made to induce persons to purchase it and settle upon it. And so, suddenly, by means of that magic power, the Press, those "bad lands," "sandy plains," "wasted deserts," "el llano estatado," "basins of salt," "black hills," and so on, became fruitful as the vale of Cashmere. Here were "homes" for the "homeless" and "lands for the landless." These and other catchwords were used to ensnare the unwary.

The efforts which were and are made to sell lands thus acquired, are familiar to the public. The fruitless, exhaustive struggle of the settler to produce something from the barren soil, his misery and destitution, only those can know whose duties station them within the confines of those worthless lands, and where they have the opportunities for personal observation.

LETTER TO THE NEW YORK TRIBUNE.

In the New York *Tribune* of February 27, 1874, there was published a letter, which I had prepared, pronouncing a large proportion of the lands of the Northern Pacific Railroad Company, worthless, both for agriculture and as a security for money. The last part of this statement is already verified, as the completed road is now in possession of its maximum quantity of land, and, excepting perhaps some formal drawbacks, more good land to the mile than it can ever have again, should the construction of the road be resumed.

By the term "worthless for agriculture," I mean in a strictly commercial sense; for there is no kind of agriculture in these distant countries, except in a very limited

way, that can return to the farmer the money he invests, and a very large proportion of this land will not raise crops at all. It is barren through want of summer rains. There is much of it, however, composed of alkali, where it would be impossible to raise crops were there an abundance of rain. But even with plenteous rain-falls and no alkali, past experience shows that the dreadful scourge of insects would destroy all vegetable life.

In the *Tribune* letter, it was emphatically stated that what is proclaimed by the Northern Pacific as the "Northern Tropical Belt," is a myth; that notwithstanding we have a very high temperature in summer—sometimes 104° Fahr. in the shade—and delightful autumns, we have a corresponding degree of cold in the winter, sometimes 45° below zero, and accompanied with storms destructive to life; that we have comparatively no spring, summer immediately succeeding winter, while our annual average of temperature is but 42°, or ten degrees above the freezing point. As evidence of the correctness of this statement, see Professor Blodgett's standard charts, and the meteorological reports in the office of the Surgeon-General of the army.

The *Tribune* letter has called out, as was expected, much criticism and contradiction. I have been accused of hostility to a great interest, ignorance of the subject, and bribery. These charges have been often couched in insolent language. A few of these criticisms will be referred to in this paper.

WHY THE MIDDLE REGION IS NOT ARABLE.

My main proposition, that there can be no general agriculture along the line of this road, is equally true of all that immense country lying between the 100° meridian west longitude, the Sierra Nevada Mountains, the British Possessions, and Mexico. The comparative worthlessness of this great tract of land is owing to the insufficient fall of rain. From this general statement is to be

excepted the very limited valleys that can be irrigated, and the beneficial effects of an occasional wet season.

These facts have been incontrovertibly proven. They are recorded in the archives of the government, with positive statistical evidence, and this information so well known to the intelligent people resident in this middle region, has been gained by long experience.

METEOROLOGICAL REPORTS.

For fifty years the government has been engaged in a system of accurate instrumental measurements of the rain-fall and temperature, at all its military posts, and at many other places. These observations are made with the best instruments, under the direction of officers of the army, and I do not know that any intelligent person has ever questioned their perfect accuracy. The snow-fall of winter is melted and measured, or carefully computed, as is the annual rain-fall.

By examining closely these tables, which extend to the readings of millions of observations, and which are available in most libraries of the country, we find that single, simultaneous observations at different points, as well as separate observations at the same points at different times, either of temperature or of rains, give widely different results. By taking the averages of a great number of these consecutive observations at the same point through a great number of years, we get a general average that is constant. That is, while for consecutive years we get variations in rain-fall sometimes of twenty inches, by taking the average of eight or ten consecutive years at the same point, anywhere in the tables for the last fifty years, we get practically similar results. The yearly averages so obtained will not vary more than two or three inches from each other. In other words, for periods of eight or ten years the amount of rain-fall in any given locality is practically constant. Another point shown is, that these quantities do not change abruptly in changing latitude or longitude, but are regularly and gradu-

ally graded into each other. This has proven, beyond all controversy, that the laws controlling this phenomenon are constant through such periods of time as we have need to deal with, and, although we can not portend what the rain-fall of any one year may be, yet, by taking several years long enough to embrace the full average, say eight or ten, we can tell what the sum of them will be. This has enabled the construction of maps so shaded as to accurately represent the different quantities of rain falling on the various parts of the country. Lines of equal temperature have also been marked out with great accuracy. These are not fanciful displays of color upon paper, but are results of faithful labor intelligently bestowed upon data that has taken fifty years to gather.

There has not been so long a time devoted continuously upon the observations along the Missouri river, but for a very long time the different posts of the Hudson Bay and Northwest Fur Companies have kept these records, from which, with other trusty information, the government has constructed these charts. By these calculations there has been given this region fifteen inches of rain annually, and lines of equal heat running near this point, that very nearly correspond with the observations for years past made at Fort Buford. Our reports at this post, which for eight years have been continuously and accurately kept, show an average of but 12.50 inches of rain-fall, two and a half inches less than shown on the rain-chart. The following is taken from the public records at the post, the upper line of figures showing the annual rain-fall, and the lower line the rain-fall for the four growing months of May, June, July, and August for the same years:

"*Report of Rain-fall.*

"1867, $\frac{6.58}{5.17}$; 1868, $\frac{11.59}{9.31}$; 1869, $\frac{9.74}{5.23}$; 1870, $\frac{9.19}{6.25}$; 1871, $\frac{9.42}{3.98}$; 1872, $\frac{19.99}{6.77}$; 1873, $\frac{21.11}{10.78}$; 1874, $\frac{10.63}{4.49}$," to August 11.

"The above is an exact copy, taken from the records of the post. The actual rain for the last twelve months, end-

ing November 1, 1874, is $6\frac{47}{100}$ inches, less than a third of that of last year.

(Signed,) "J. F. MUNSON,
"*1st Lieut. and Adjt. 6th Inf'ty, Post Adjt.*"

RAINY SEASONS OF 1872 AND 1873.

I desire to call especial attention to the amount of rain that fell in the years 1872 and 1873, as upon these facts will rest much of this discussion. It will be noticed that, while in all the other six years only 57.06 inches fell altogether, a little more than one year's rain in the productive States, or an annual fall of 9.50 inches, an average of more than double that amount, or 20.55 inches, fell each year for 1872 and 1873.

It will be remembered that it was during these two years of very unusual growth that the Northern Pacific Railroad to Bismarck was built. This work was done by men who had no other experience of the seasons in Dakota, and it is no more than natural that they should honestly believe that they had seen a fair example of the seasons of the country. All they said of it corresponded with what they had always known of other countries.

GEN. CUSTER'S LETTER.

The experiences which deceived the builders of the road must have been those of Gen. Geo. A. Custer (but in a more decided way), who wrote a nine-column article in reply to my letter, the plain intent being to throw discredit upon my statements. The Custer plea was written after he had seen one season only, and that the last of the two most exceptionally rainy seasons on record. He accurately described the only example of a season he had ever seen in this country, and that appeared like those he had been accustomed to see in productive countries. He so published it to the world, not reminding the reader that he was substituting an example, and the only one he had knowledge of, for a general result. Had he served in this interior

country fourteen years, or had he given the statistics, which he calls hospital reports, the attention due them, he might then have a knowledge that would give his writings weight.

All I had written upon this subject I believed to be true, and had evidence for all my statements. It should be said in the outset of this brochure, that the frequent and prominent presence of Gen. Custer in this discussion is unavoidable. It is the result of his interference and question of my statements and motives. The personalities involved in such a discussion are extremely unpleasant to the public, even more than to the individuals concerned; yet justice can not be done, either to the parties involved, to the public, or to the truth, which, in this case, is of transcendent importance, without bringing forward Gen. Custer. And if he becomes the chief witness against himself, he may thank the "caceothes scribendi" which has sometimes brought disaster upon other and more prudent men.

The difficulty of understanding the character of a dry country like this, so entirely different from the countries we have been familiar with all our lives, where there are continuous rains, may well be understood.

General Custer states, in general terms, that this Western Dakota, along the line of the Northern Pacific Railroad route, is a valuable agricultural country, attractive to the emigrant, with an abundant rain-fall, and that it will produce in profusion the cereals and fruits common to the Eastern States. He also declares that I wrote without seeing or knowing the country, or from impure and wicked motives, and from a point far from the line of the road. He admits that the land is really worthless at this particular post. He strives to make the reader believe that I knew the land along the railroad was good, and that in my statement I was guilty of unfair motives. General Custer says that I attempted to depreciate a valuable property in the hands of poor people, while, had I desired to do them a kindness, as I pretended, I ought to have pronounced the country valuable, and that I had

founded my declarations upon rumor and ignorance. In all this he avers I was committing a great moral offense, and that he proposed to satisfactorily prove that my statements regarding the unfitness of this interior country for general agriculture "were not only untrue, but were actually the reverse, and written in ignorance thereof."

General Custer further says: "What would be thought of a person who should attempt to form and publish an opinion of the rich, fertile soil composing the sugar and cotton lands of the Southern States, when such opinion was only based upon an examination of the swamp lands of Florida, Louisiana, and Mississippi; yet a similar course has been pursued by General Hazen."

Each of these grave personal charges of my brother officer will be considered in its proper place. The General asserts his philanthropical intent by saying: "It is to utter my protest against a sweeping and unfounded denunciation of this great Northwest that I write these lines." And then closes with the sage and unselfish advice to our national legislators, that this railroad scheme "might well warrant the general government in considering this enterprise one of national importance, and in giving to it at least its hearty encouragement."

WHAT SOME OF THE NEWSPAPERS SAID.

General Custer's nine-column reply to my letter of a column and a half, appeared in the Minneapolis *Tribune*, the principal western organ of the Northern Pacific R. R., in April, just before the bill for the relief of the road was introduced in Congress. The following is a portion of the editor's rather extraordinary heading:

"General George A. Custer in reply to General Hazen. Personal observations and experience *vs.* prejudice and unfounded rumors. General Custer describes what he and hundreds of others saw last summer. And refutes General Hazen's sweeping condemnations. Wheat, corn, oats, potatoes, vegetables of all kinds, and many variety of fruits grow luxuriantly, are excellent in quality, and yield enormously."

This newspaper further says:

"General Hazen's condemnation of the Northern Pacific lands, and of the Northwest generally, was made up of prejudice and rumors of an exceptional character, while General Custer speaks from personal observation and experience, and brings abundant corroborations for any assertion he makes. His letter is an able vindication of the country, and we trust his statements will be given as wide publicity as the *false* and groundless *misstatements* of General Hazen."

"*Custer versus Hazen.*"

Minneapolis *Tribune*, April 21st: "The *Tribune* of the 18th inst. contains an article from General Custer, in reply to General Hazen, in relation to the country through which the Northern Pacific passes. The General has examined the matter thoroughly, and knowing whereof he speaks, refutes every statement made by Hazen, intended to injure the country, adducing facts and figures which can not be controverted."

The following is from the Bismarck *Tribune*:

"Some time ago, the editor of this paper, in replying to the wild assertions of General Hazen, relating to the Northern Pacific, took the liberty to use the name of General Custer, quoting him favorable to the country. The General has justified our reference by defending the country in an eight-column letter in the Minneapolis *Tribune* of Saturday last."

From the same paper:

"Among the latest articles in reply to General Hazen is one from General G. A. Custer, who has taken up the statements of Hazen in detail, proving their falsity."

These sayings I have thought best to notice and see how far the letter referred to accomplishes what is claimed for it.

I have endeavored to describe the country truly, that others may not be injured by what I conceive to be misrepresentations about it. I sought to incite such discussion

as might tend to the same end, thus averting injury both to private individuals and to the country.

I will now introduce a letter about this region from the veteran soldier, General Sully, and then other letters and statements bearing upon the same subject. I will first state, however, that from three years' observations along the Missouri river, I find that portion of the land about this post, Fort Buford, and the mouth of the Yellowstone, fully equal in quality to that about Bismarck and Fort A. Lincoln, and greatly superior to nine-tenths of the country for a thousand miles below it.

GEN. SULLY'S LETTER.

"FORT VANCOUVER, WASHINGTON T.,
"*June* 18, 1874.

"DEAR GENERAL:—Your letter of the 3d of June reached me at this post yesterday. I have not seen your letter about the N. P. R. R. published in the New York *Tribune*, but saw in the *Army and Navy Journal* an article in regard to it. In answer to your question about my opinion as to the climate, character of the soil, etc., of the section of the country through which the N. P. R. R. passes, I would state as follows: My experience of that section of country dates back as far as 1854, when I was stationed in what was then the Territory of Minnesota, near what is now the western frontier of the State, from that time till 1859, when I marched across the country to the Platte river. I was on duty in different sections of the country between the Missouri river and Minnesota, and on the Upper Missouri. From the fall of 1863 to 1866, I was in command of troops operating against the Sioux nation, who were then in a state of war, both in the east and west of the Missouri river, as far west as the Yellowstone river and north to the British Possessions. In 1867, I was again sent into that country to visit the different lands of the Sioux, and went up the Missouri river as far as the mouth of the Yellowstone. In 1869 and 1870, I was stationed in Montana; visited the Yellowstone valley and the head waters

of the Columbia river, on the west side of the Rocky Mountains, and now I am located in Washington Territory. I have thus had some opportunity of judging of the nature of the country through which the N. P. R. R. is to pass. The country west of Minnesota, till you come to the Missouri, is decidedly bad—a high, dry, rolling prairie, unfit for cultivation, except in a very few detached places. Alongside the very few springs in that country, there are several ponds or small lakes, but very few of them contain water that you can drink, and many of them dry up in summer; there is very little, in fact you may say no timber in the country, and as a general rule very little rain falls during the summer. The country might do for grazing, but cattle would be obliged to roam over large sections of it, and in winter would perish for want of timber, or other means of protection against the climate, which is very severe. There are heavy snows and heavy winds, and it is very cold. The country west of the Missouri to the Yellowstone is much better in every respect, more arable land, more timber, more drinkable water, and I found on my trip across the country many large deposits of coal or liquite. Still I would not recommend it as a good country to settle in, and large portions of it never can be inhabited, not even by Indians.

"As regards the climate, it is about the same as in the country east of the Missouri. I saw by General Stanley's report of his expedition with the railroad company through that section, that he had considerable difficulty with high water in the streams. I found no such difficulty when I crossed through that country. The season, however, was very dry and the rivers so low that I forded both the Yellowstone and the Missouri, just above the mouth of the Yellowstone, with my command, some 2,000 cavalry. *

* * * * * * * *

"Yours, with respect,

(Signed,) "ALF. SULLY,

"*Colonel 21st Infantry.*

"TO GEN. W. B. HAZEN, *U. S. Army.*"

General Sully also speaks highly of the valleys of Montana and of the Pacific coast country, and especially of the timber. The climate, he says, "is far better than east of the mountains." The drouth he encountered was that of ordinary seasons here, differing widely from the anomalous seasons of 1872 and 1873, which have done so much to mislead the hopeful people all along the border, and to encourage settlements that must be and are now being abandoned all along the line.

Of serious importance is the subjoined description of the character of the country along the northern international line by an officer who was of the escort to the boundary commission. Especial attention should be given to this letter, because the route described crosses a large portion of that country, marked out on the large advertising map of the Northern Pacific as the "International Wheat Garden." Across the entire breadth of the "Garden" there was not found one drop of running water. As the boundary crosses the country following an ideal line, it gives us a true picture of the land, while parties following the beds of rivers and other routes practicable for roads, gain no really accurate knowledge of the whole. General Sully's statement embraced the country from Minnesota to this point. The following letter continues the description on to the Rocky Mountains:

LIEUT. CROWELL'S STATEMENT.

"FORT BUFORD, D. T., *September* 7, 1874.

"GENERAL:—That portion of the Northern Boundary Survey to which I was attached, marched up the Quaking Ash creek, which rises near the line and runs due south, emptying into the Missouri river about sixty miles west of this post. At a point ten or fifteen miles from its mouth, the timber disappears altogether, and not a stick or bush is found on it from that point on to its source, a distance of at least seventy miles.

"The bottom land on the Quaking Ash is, for the most part, covered with cactus, with occasional patches of sage-

brush. Our line of march was from 105° of west longitude, along the 49th parallel, with occasional debouches to the south, from eight to twenty miles, to avoid bad lands through which it was impracticable to take a wagon-train. From the initial point on the line to the Sweet Grass hills, a distance of from four hundred and fifty to five hundred miles, we crossed but two running streams, namely, 'Frenchman's creek and Rock creek,' the latter a small stream that later in the season becomes dry.

"I do not believe it was possible to have gathered a ton of hay on a strip of territory extending two and a half miles each side of the line, and running west five hundred miles. We crossed the Milk river eight miles south of the line—bed of river at crossing perfectly dry; water was found near by, however, in standing pools. All of the country I saw, with the exceptions hereafter noted, is, in my opinion, wholly worthless—its only productions being the cactus, prairie dog, and rattlesnake. There is not an acre of arable land, and can not be made so for the want of moisture, between 105° and 112° of west longitude, that I saw, excepting perhaps a hundred miles of the valley of Milk river. At a point on the Milk river some seventy miles south of the line, running water is abundant. As we approach the Missouri from this point, the valley widens out, vegetation becomes more luxuriant, timber increases in size and quantity, and in some localities the growth of grass was quite heavy, and, altogether, the country improves, resembling somewhat the valley of the Yellowstone. On our return march, we crossed no reliable running streams, except Milk river and Frenchman's creek, and I am not sure that the latter could be depended on the year round.

"Very respectfully,

"Your ob't servant,

(Signed,) "W. H. H. CROWELL,

"*1st Lieut. 6th Infantry.*"

WHAT OTHERS OF THE INTERNATIONAL BOUNDARY SURVEY SAY.

The other officers of the expedition confirm every word of the above, and state explicitly that their route, until they arrived near the Rocky Mountains, meridian 112, was over a worthless country.

Major Bryant, in command of the infantry escort, says of the country: "It is a blank to the Rocky Mountains, eight degrees of longitude."

Major Twining, the astronomer of the U. S. Commission, says: "The country can not be settled, except near the Rocky Mountains."

Other officers, of perfect reliability, have informed me that there is not a drop of running water along the international boundary, from the vicinity of Devil's Lake, longitude 99, to the Rocky Mountains, fifteen degrees.

TESTIMONY OF CORRESPONDENTS WITH THE BLACK HILLS EXPEDITION.

The New York *Tribune* correspondent, in his letter from the Black Hills, of July 17th, published August 20th, gives a description of the country, which is accurate. It is an exact verification of my account. The report of Gen. Custer is exactly the reverse of that of the correspondent and of mine. He says:

"Dakota, the year round, is a very dry country." And, after alluding to the untrustworthiness of the Northern Pacific's advertising circulars, says:

"The northwestern part of Dakota, on a line from Fort Lincoln to the Black Hills, I am obliged to say, is a better region of country than on the line due west of Lincoln, or, rather, the route of the Northern Pacific Railroad. In each section there are tolerably large areas of good grazing land, and the country would be good for stock-raising, if water and timber were abundant. At the same time, there are much larger areas of cactus and alkali, utterly unfit for the habitation of man or beast. Even the grass-growing districts, valuable for grass-growing purposes, offer little inducements for agriculture, the insufficient rain-fall being an

insurmountable objection. The native grasses furnish no argument for the success of grains, since they are thoroughly acclimated."

This is the first thoroughly comprehensive and accurate statement upon this subject I have ever seen in print, and it will be found true, with limited exceptions, to the line of Mexico southward, and the Sierra Nevadas westward. The portion of the Northern Pacific route here alluded to, is that portion described by Gen. Custer last summer. He quotes from his diary, that on his return, the volunteer crop of oats was found grown, where they were scattered going out. He also describes limitless meadows. As the correspondent had not, at the time this was written, seen that country since last summer, when he was in company with Gen. Custer, his impressions of it must have been formed at that time. On reaching the Cheyenne river, the St. Paul correspondent takes up the description thus:

"The last twenty miles is through a poor and hilly country; the soil, naturally thin, is rendered almost barren by drouth. The timber gradually runs out. On the river, only a few cottonwoods grow, and to the southward, the treeless arid plains extend indefinitely."

The following was written by the New York *Tribune* correspondent, Mr. Barrow, after returning from the expedition. It is introduced here, to show, that in writing from Fort Buford, I was correct in making my description of the country apply to that along the proposed line of the North Pacific:

"Returning over this trail a second time for nearly a hundred and fifty miles, I found that impressions of the country received last year were again renewed. Of the country traversed by that expedition, the section between the Big and the Little Missouri rivers, excepting occasional tracks along the Yellowstone river and the valley of the Missouri river, was altogether the best. But even this offers few inducements for the settler, while the region west of the Little Missouri and west of the Yellowstone is hardly worth giving away. The admirable letter of Gen-

eral Hazen to the *Tribune* last winter, giving a full and accurate description of the country in the vicinity of Fort Buford, well characterizes the region of which I speak. It is part and parcel of the same lot. Northern Pacific Railroad speculators are still making strenuous efforts to persuade emigrants of the fertility of this section of the North American desert. But while there are thousands of acres of good farming land still unoccupied, no one who has a modicum of practical wisdom will select his homestead here. It is useless to deny that the country is a desert. The sad necessity of redeeming it has not yet arrived."

FROM LEWIS AND CLARKE'S REPORT.

On page 326, Lewis and Clarke's Expedition, we find the following:

"From the Cobalt Bluffs to the Yellowstone (where Fort Buford is now situated), a distance of about one thousand miles, the hills follow the banks of the river, with scarcely any variation. From the James river, the lower grounds are confined within a narrow space by the hills on both sides, which now continue near each other up to the mountains. This space is from one to three miles, as high up as the Muscleshell river, beyond which the hills approach so near as to leave scarcely any low ground on the Missouri; and, as you approach the falls, they reach the water's edge."

This accurately describes the valley of the Upper Missouri. As to its soil, it says:

"The soil is still rich, yet the almost total absence of timber, and particularly the want of good water, there being but a small supply in the creeks, and even that brackish, oppose powerful obstacles to its settlement."

At the town of Bismarck, water is hauled from the Missouri river, and peddled by the gallon; and at the military posts along the river it is obtained from the same source.

The following is a letter from the hay contractor of this post for this year:

STATEMENT OF HAY CONTRACTOR.

"FORT BUFORD, D. T., *September* 6, 1874.

"*Gen. W. B. Hazen:*

"In reply to your communication of August 31st, I would most respectfully state that, with regard to the supply of hay for Fort Buford, this year, I was able to find about 275 tons of hay between eight and nine miles from this post, but, owing to the thinness and shortness of the grass, I was compelled to keep three machines running, in order to cut from twelve to fifteen tons of grass per day. After that, I was compelled to haul the remaining 125 tons twenty-five miles, and keep the three machines running, in order to cut grass enough to keep ten two-horse teams employed, *the teams making one trip in three days.* I then had to move a distance of thirty miles above the post—having previously cut below it—in order to get hay for my own use. I found about 100 tons at this point, but it was short, the same as at the other two places. The grass I had to haul twenty-five miles cost me $21.75 per ton, and that does not include anything for the labor of the teams, nor the repairs on wagons, machines, etc.

"I have been talking with Mr. Joseph Sparks, who has been employed by the contractors at this post and at Fort Stevenson for the past six years, and he says that, in an average season at Stevenson, they would generally get about 300 tons, and any amount above this they had to haul not less than twenty-five miles.

"Respectfully,

"JAMES LEIGHTON,

"*Contractor.*"

This is a fair exhibit of the ordinary trouble and cost of securing hay in this country.

WHAT THE BISMARCK FARMERS SAY.

The following was published by the Bismarck *Tribune* last spring:

"FARMING IN BISMARCK.—It has been stated that this is not a farming country, and, in a review of Gen. Hazen's letter, the editor of this paper some time ago stated that he knew better. There are others who know better also—practical men—some of whom raised good crops here last season, and who are willing to risk their time and money again.

"The following named gentlemen, for instance, will plant the number of acres set opposite their respective names, viz:

"Oscar Ward and son, 28; H. N. Holloway, 15; R. M. Douglass, 40; J. M. Ayers, 15; Col. Donnelly, 15; Col. Lounsberry, 20; Charles McCarty, 15; Henry Waller, 10; Mr. McNeill, 4; W. E. Cahill, 20; Messrs. Bonner and Demarsh, 30; Fred. Girard, 40.

"Many others, whose names we have not learned, will also put in from two to ten acres; and they will succeed, because every farming experiment tried here has succeeded."

At the close of the season, when the crops are harvested, it will be conclusive evidence to give the reports of the degree of success of these individuals from their own lips.

"CAMP HANCOCK, D. T., *September* 14, 1874.

"*My Dear Gen. Hazen:*

* * * * * * * *

"R. M. Douglas planted ten acres of potatoes, oats, and garden-truck. Said he would get nothing but a few potatoes.

"W. E. Cahill planted fifteen acres. Grasshoppers destroyed all but one-half acre of potatoes.

"Col. Donnelly has about two acres of potatoes.

"Mr. Ayres told me he had planted ten acres, and would get nothing.

"Mr. Ward planted thirteen acres. Said he would get about sixty bushels potatoes, besides a few squash and melons.

"Col. Lounsberry, editor of the Bismarck *Tribune*, expects to have 300 bushels potatoes." [After gathering them, he informed the writer he had twenty bushels only.]

"Henry Waller planted twenty-five bushels of potatoes on three acres, and gathered five bushels."

[The foregoing is all directly from the mouths of the parties mentioned. The other four have been heard from indirectly, but just as accurately, and their lack of success is similar.]

"The season has been very warm and dry. Grasshoppers destroyed nearly everything that survived the drouth.

* * * * * * * *

"Farming here this year has been nearly, if not quite, a failure. Some of the men are disgusted, and say they will not try it again; others are bound to try it one more year.

* * * * * * * *

"Very respectfully,

"Your obedient servant,

(Signed,) "H. R. PORTER."

With all these facts, the government, at the instance of the Northern Pacific, has surveyed the railroad strip for one hundred and fifty miles before reaching the Missouri river, and has even been induced to open a land-office in the country for the sale of this arid land. And now, to complete the farce, the railroad company, who, by the terms of their land-grant, are to pay the cost of surveying their lands, are petitioning Congress to be released from this part of their engagement.

STATEMENT OF A GENTLEMAN AT FORT BERTHOLD.

The following interesting letter, giving the general results of agriculture in this region, this season, is from a most worthy gentleman, who asks me to omit his name for reasons that seem perfectly good, but adds:

"If any person should impugn this statement as an invention of your own, you may use my name as authority, without hesitation."

"BISMARCK, D. T., *September* 6, 1874.

"*General:*

"I have recently made a trip extending from Fort Buford to this place, and carefully examined, personally, the agricultural operations at various points along this route. At Fort Berthold the wheat and oats have been entirely destroyed by grasshoppers, and, owing to the long continued and severe drouth, the other crops of corn, potatoes, squash, pumpkins, etc., will not amount to half a crop. At Fort Stevenson, the post garden and patches cultivated by the post-trader and others will produce almost nothing. * * * At Bismarck, it is the same story. Grasshoppers and drouth, with the additional accompaniment of bugs, have destroyed the hopes of the farmer, and given another year's experience to prove that farming in Dakota is a total impossibility.

"It is a monstrous fraud and a great wrong for interested parties to induce immigration to this territory, under the plea that it is a good farming country, whereas every truthful man must know directly to the contrary. A residence of nearly nine years in Montana and Dakota has afforded me some knowledge of the agricultural resources of these territories; and I fearlessly assert that, without irrigation, successful farming is an impossibility. * * * * * * * * *

"Nor can irrigation be successfully employed, except in a few places in Montana, and not at all in Dakota. That farming is a complete failure in that part of Dakota alluded to in the beginning of this communication, can be, I think, proved conclusively, by the fact, that where it has been tried under the most favorable auspices, as at Fort Berthold, my home, where there is fine land, as fertile as any in the territory, and where the government has yearly lavished large sums of money, the agency farm, in general terms, from first to last, has been a dead failure.

It has swallowed up the chief part of the appropriation to the Ree Indians, in fruitless and disheartening experiments. Then, at Bismarck and in this vicinity, in spite of all the puffs and poetry of sanguine writers, the hard, naked fact remains, that it can not raise anything like a supply even of vegetables—which, for the daily market, are being brought from the Red river, two hundred miles—not to mention cereals, for its wants. Every one knows this, and why it is persistently stated that this is a good farming country, passes comprehension.

"The want of moisture exists in all the country lying between the 100th meridian and the Rocky Mountains, and from the British line on the north to the Mexican border on the south, no successful farming is known, except by irrigation.

"I will here quote the opinion given by Mr. Meeker, the founder of the Greeley colony in Colorado, who states that 'agriculture, without irrigation, in the countries lying between the 100th meridian and the Rocky Mountains is an *impossibility*.' * * * * *

"In Dakota, stock must be kept up during the winter, and very frequently the hay is of so inferior a quality (a good deal being cut on the bottom lands, where it is mixed with rose-bush and weeds), that stock fed on it alone can hardly live throughout the long severe winters, even when well-housed and sheltered. Indeed, if I mistake not, cattle at Forts Lincoln and Berthold have perished during the winter, owing to the inferior quality of the hay and its want of nutritive qualities, rendering it insufficient to support life during the long, terribly cold, and inclement Dakota winter.

"In this connection, I may state that I know something of the country contiguous to the Yellowstone and Muscleshell rivers. * * * I have walked over a great deal of it, and a more dreary, desolate, and forbidding region, it would indeed be difficult to find.

"I do not forget that a few years ago some parties represented that the Muscleshell country was a paradise, and

they had a map published of Muscleshell City, laid out with beautiful wide streets, adorned by magnificent buildings, etc. The effect of which was to induce a number of credulous people to sell off their homesteads, and seek their fortune in this new El Dorado. Extending up the Muscleshell river, are to be found the decaying houses and rotten stakes of claims, long since abandoned by the deluded victims.

"I confess, when I think of the enormous lies promulgated by paid advocates of the Northern Pacific Railroad Company, who describe the land as 'a scene of never-ending beauty,' etc., I am constrained in charity to ascribe this, not to a deliberate desire to falsify, but to the poetic tendency of the times. * * * * *

"Let me give, for the benefit of farmers thinking of immigrating here, another hard fact—the official record of the rain-fall at Fort A. Lincoln for the following months of this year: May, 0.45 in.; June, 0.97 in.; July, 0.14 in.; August, 1.28 in. Total, 2.79 inches. * * *

"The following gives you an idea of the hay difficulty: * * * * * * * *

"At Fort A. Lincoln, where the government contracted for about 8,000 tons, at an average price of $9.75 per ton, the contractor has been able to furnish but 106 tons, and has abandoned his contract, and the government is purchasing from private individuals, in open market, in such quantities as can be picked up, at about $14, and it is thought that the quality required can not be had at a less price than $15 per ton. The chief part of the hay has been brought by steamer, a distance of about fifty-five miles by water and thirty-five by land. There has been perhaps about 2,000 tons of hay cut within a distance of fifteen miles from Fort Lincoln, in small lots, at points widely separated. It was cut by a great number of parties, who gleaned it out of ravines, cooleys, etc., and it will probably be all required to supply the wants of Bismarck. * * * * * * *

"At Heart river and Apple creek, there was considerable

hay cut; but a large part of the hay gathered at the former place has been condemned, on account of its being so mixed with weeds and sage as to be unfit for use, and at the latter, the hay obtained will share the fate of the Heart river hay, unless the necessities of the government compel its acceptance.

"At Fort Stevenson, the government contracted for about 400 tons of hay, at an average price of about $8 per ton, which is not as yet supplied, and the hay which is now being furnished is badly injured by frost, and would not, I presume, be accepted, if good hay could be obtained anywhere in the vicinity. A great part of the hay cut for that post, was cut by hand, in small lots, gleaned out of ravines. The contract will probably be filled.

"At Fort Berthold, the contractor, after 'hard scratching,' managed to complete his contract for 150 tons; but it had to be gathered principally about twenty-five miles from the agency, and had to be cut in small patches at increased cost, by the employment of extra labor and additional time. The price paid by the government was $15 per ton. * * * * * *

"Owing to the extreme dryness of this climate and the scanty rain-fall, the hay crop, like all other crops in the country, will be always precarious and uncertain.

"Yours respectfully,

"_____ _____."

GEN. CUSTER—HIS POWER OF OBSERVATION AND DESCRIPTION.

In order that the reader of Gen. Custer's descriptions of this country may understand them, it is well to compare his statements by the side of other writers who were with him at the time.

I will quote the following description given by him of a portion of the country toward the Black Hills. It is written of a place twelve miles before reaching the line of Montana:

"After the second day from Lincoln, we marched over a beautiful country; the grazing was excellent and abundant

for our wants, and water in great plenty every ten miles. When we struck the tributaries of Grand river, we entered a less desirable country, the streams being alkaline, but we found a plentiful supply of grass, wood, and water. Upon leaving the head waters of Grand river, we ascended a plateau separating the waters of the two Missouris, and found a country of surpassing beauty and richness of soil; timber abundant, and water both good and plentiful."

This is a fair example of all the Black Hills compositions of Gen. Custer, and gives to the uninformed reader the impression of at least a fair country.

Eight miles farther along on the journey, the correspondent of the St. Paul *Pioneer* writes to his paper, of the same part of the route and country, as follows:

"The country is sterile and drying up. We circled around knobs, marched and countermarched along ravines, halting in the burning sun, until glad to at least find shelter in our tents. * * * Sometimes, while delayed at crossing a treacherous alkaline flat, and while the sun smote us with its powerful heat, we have found a resting-place 'in the shadow of a rock in a weary land.' Such a rest, and such a shadow! Oh, how grateful and thankfully enjoyed!"

No one can properly appreciate the full meaning of these last sentences who has not had a similar experience on the furnace-like plains of Texas and New Mexico.

"When the wind blows hard, the fine dust and alkali is lifted and mingled with the air; is painfully irritating to the eyes, and chapping the skin. All the next day, we traveled over the poor cactusy alkaline flats, crossing a number of dry channels, finding no water, except in stagnant pools. Hills, from 150 to 200 feet high, are standing here and there, and their bald, weather-beaten sides only add to the dreariness of the scene. Traveling through such a country as this, with the thermometer at a hundred in the shade, takes the enthusiasm out of a neophyte. * * *

"The next day brought us across the territorial line into Montana. The first nine miles, the country grew no bet-

ter, but rather worse—the same barren flats and naked hills. Just before reaching our present station, we climbed a long hill, out of the bad land bottoms, and reached a beautiful plain. Except for lack of timber, it can hardly be excelled anywhere."

From this point on to the Black Hills, the New York *Tribune* correspondent says:

"The expedition moved in a southwest direction, until it reached the valley of the Little Missouri. * * This valley was almost destitute of grass, and we left it in search of a better camping-ground, marching over thirty miles, and found a dry camp. From the Little Missouri to the Belle Fourche, the country was generally barren and uninviting."

Here they met the rains of August, so copious in all the West at that time, and found good grass and water, and it was here they commenced entering the Black Hills, where were found beautiful valleys, some good timber, flowing streams, and the enchanting scenery which forms such a striking feature of all that interior region vaguely known as the Rocky Mountains. With these most marked exceptions, which may be found in all the Territories, the descriptions given by these two correspondents, here and previously in this paper, will apply very accurately to this great interior region three seasons out of four, as the writer can affirm from personal experience. Arid and fruitless as it is, it does not approach the extreme barrenness of much of the country between the Rocky and Sierra Nevada Mountains. As we ascend to the high altitudes of these mountains, the rains increase proportionately. It is not uncommon, in these lower regions, to see aerial showers of rain, when not a drop reaches the earth, it all being absorbed in the more dense atmosphere near the earth's surface. These correspondents also state that for 155 miles before reaching the Black Hills, there was no running water.

There is really no discrepancy in these accounts, although conveying widely different impressions. Let us not do this enterprising officer injustice. Gen. Custer is full of en-

thusiasm. At every ten miles he finds wood, water, and grass in abundance. But abundance to him is abundance for his military command two or three times a day. Everything is beautiful to him so long as his command is well and prospering in the journey for which he is responsible, and which absorbs his thoughts. He knows that thousands of people in every part of the land are watching with a kind and hearty interest the success of his expedition, and he has succeeded in carrying into his reports his own wishes and feelings. On the whole, the newspaper correspondent describes things as he sees them. The correspondents on this expedition evidently had already lost whatever enthusiasm they may have set out with. Having no personal interest but to report correctly for their papers, they write with unbiased minds and report those more general characteristics of the country which first impress the civilian. They found a parched country, without running water, wood, or grass, excepting in very small quantities, with cactus, alkali, and stagnant pools, all the way to the Black Hills and back. At the Black Hills they found the usual interesting features of all mountainous regions.

Where Gen. Custer saw plenty of water, the correspondents noticed it was stagnant, and for 155 miles they saw not a drop of it running. Where the General saw grass in abundance for his stock, the citizens noticed the country was all dried up, and the good grass only in occasional patches; and where the commander saw wood for fuel, the others noticed that it grew scraggily and sparsely, and only near the water.

I have noticed this with no unkind intent to Gen. Custer, whom I genuinely admire, but merely to show how necessary it is to know men and understand their peculiar tendencies and their stand-point of observation in order to properly interpret their writings. Enthusiasm is a most admirable trait when properly directed, but it often deals with colors so bright that facts are transformed into fiction.

To better illustrate the truth of this remark, on the

return of the Black Hills expedition Gen. Custer made a statement to a reporter about the gold discoveries. He said:

"The reports are not exaggerated in the least, but prospects are even better than represented. * * The product of one pan of earth was laid on my table which was worth not less than two dollars. * * The scientific gentlemen are satisfied that far richer discoveries will be made."

And of the agricultural characteristics:

"Too much can not be said in favor of the agricultural worth of the Black Hills."

To all this, Prof. Winchell, the chief *savant* of the expedition, has already spoken, alleging that his conscience will not permit him to keep silent. He says that the country is not fruitful, and there is no evidence of rich mines. Col. Grant also says: "All the good land in the Black Hills will not make more than twelve good farms."

No one believes that these gentlemen have uttered what they believed untrue.

The expedition was understood and always mentioned out here as the "Custer gold-hunting expedition." The search for gold was believed by many persons to be its sole purpose. The belief that gold existed in the Black Hills was pretty general before the expedition started, so that the report of discoveries was fully anticipated before it was made, and, so far as I know, no one's opinion was influenced by that report. The miners of the expedition were shopkeepers of Bismarck, who expected to mine their gold, not in the Black Hills, but in their shops when miners came that way. It is evident from the diversity of opinion which has been quoted about the Black Hills affair, that there was no positive data which could justify the belief that these lands were arable, or concealed the mines of Golconda.

SOME OTHER LETTER-WRITERS.

According to the report of his interviewer, Gen. Rosser states that I am discussing a subject I have not taken the

pains to inform myself upon. He sharply attempts to refute my statements with regard to lack of rains. He says within a range of five miles of Lincoln 2,500 tons of hay were cut and cured at $4 a ton. Let the reader refer to the history of the hay-gathering at Lincoln this season, given in another place in this paper. He also refers to an interviewer who was at Minneapolis, and points to the fine farms along the line of the road, as a refutation of what I had said of the country. Gen. Rosser could hardly help knowing when he uttered this, as does every person in this part of the country, that there was not then, as there is not now, a farm along the N. P. R. R. between the Red River valley and the Rocky Mountains, nor is there a farm at any place in this entire section of country, the few Indian fields at Berthold being the nearest approach to it. Some farming was attempted at Bismarck this season, but it has failed, as may be seen by evidence given elsewhere in this paper.

The letter of Major McGinnis, delegate from Montana, written in answer to my *Tribune* letter, does not appear to require notice.

The very gentlemanly letter of my esteemed friend, J. Milner Roberts, has certainly impressed me kindly. I think, however, he should carefully review his estimates, if he expects to support a Pacific railroad upon the business of a sparsely settled pastoral community, the liquite of Dakota, or the timber of Washington. His estimates of the value of Dakota as an agricultural country, that:

"Not more than one-tenth or one-twelfth is unsuitable for farming,"

Is entirely erroneous. In this connection, I respectfully refer to the letter of Gen. Sully, whose opportunities for judging are very much superior to any Mr. Roberts could have had.

OPPORTUNITIES FOR KNOWING THE COUNTRY.

Mr. Roberts also claims that I am not familiar with this subject, and have never seen the country. I will state that I have served six years at different times, commencing in 1855, along and near the line of this road, in every State and Territory it touches. For eight years longer I have been on duty in other portions of this interior country having similar characteristics.

In addition to this, I have observed it closely, its atmospheric changes, and have experimented with its soils. I have seen every imaginable effort made to raise crops in its barren earth. I have availed myself of whatever statistics there are bearing upon this subject that the facilities of the country afford, and they are very numerous; and I claim that my knowledge of its value and general character is to be relied upon, even though my feet have not trod upon every acre of its wide extent.

Since Mr. Roberts mentions the death of Gen. Stevens as having taken place on the line of the N. P. road, giving the impression that he was a martyr to its interests, I will simply make this correction. The gallant and lamented Major-Gen. Isaac I. Stevens, the pioneer explorer of the North Pacific Railroad route, was killed in the war while leading his command at Fort Wagner, Charleston Harbor.

THE VERY LIMITED VOLUME OF RUNNING WATER.

It is well established by tradition that ever since this country has been known, it has been dry and unfruitful. Prof. Blodgett says of it, page 747, U. S. Meteorological Reports:

"There is known to be great deficiency of rain, and a large portion of that great area inclosed partially by the long curve of the Missouri river is set down as an arid and uncultivatable district by explorers. Its amount of drainage is too small to permit the supposition that it is otherwise, as all the tributaries of the Missouri below Powder river are small and comparatively unimportant streams, belong-

ing to that class of shoal rivers of the plains, falling off to a very small volume in summer."

Lewis and Clark, as well as later explorers, make particular mention of these facts.

So remarkably true is this, that in coming from James river to this post, in the month of August of this year, *via* Bismarck, a distance of 325 miles, I crossed but four running streams, and each of these could be spanned by a single step dry shod. The Black Hills expedition at the same time saw no running water on the other side of the river for 155 miles. At least half of that was so alkaline as to render it unfit for irrigation, and if all the remainder on the route I traveled had been gathered into one ditch and used for irrigation, it would not suffice for the cultivation of a space of ground to exceed one-half mile in breadth.

As has been said, there was comparatively no running water found on the Black Hills expedition, while the officers with the Northern Boundary Commission say there is comparatively no water in that country. The Milk river, the most considerable northern tributary of the Upper Missouri above the State of Iowa, has no water in its bed after ascending fifty miles from its mouth. The officers of the Boundary Commission expedition further report that for fourteen degrees of longitude along the international boundary there was no running water.

Here we have distinct accounts of about a thousand miles of this country, in various directions from Bismarck, which report comparatively no water, while it is reported by Professor Blodgett, and is well known from other sources, that, excepting the Yellowstone, the Upper Missouri has no tributaries that yield more than a mere rivulet of water in the summer season. Now, it is a well-recognized fact that, where the summer rains are so inconsiderable as to make no streams, there can be no general agriculture, and of course no water for irrigation. This example of a river without tributaries is only equaled by the Nile, which, for 1,500 miles, has no tributary at all.

Compare these instances with the thousands of running streams one crosses in passing over the less distance from Boston to Omaha, and one can form a vague idea of the remarkable drouth of this country. The Missouri, unlike the Nile, from the great fluctuations of high and low water and high hillsides, is not available, even for its narrow valley.

EXTREME DROUTH.

This fact of drouth is shown not only by the traditions of the country, but by exact measurements, which, although they extend back but eight years, are associated with other like measurements extending back fifty years, which prove that by taking the mean of eight consecutive years of rain-fall anywhere in these countries, we get a practically true expression of the rain-fall of that section. With all these facts, so potent and perfectly established, we still find many men preferring the evidence of the past two years to that of fifty, because it is what they wish to believe.

Something can not come from nothing. The rains are not created to order in the midst of these plains, but are evaporation from the oceans. The Sierras shut off what would come from the Pacific, as the atmosphere that is rare enough to pass over them is not dense enough to carry much water, while that coming from the Atlantic is well-nigh precipitated before it reaches the 100th meridian. The rain-fall over this interior region has been measured, and it is insufficient for agriculture; and, unless Heaven provides the rains in some other way than by nature's present laws, the American farmer will not take up his residence here for a long time to come.

The readers of the New York *Tribune* can not have failed to notice the very interesting letters of its Greeley (Colorado) correspondent, Mr. Meeker. He describes how they have already reached the limit of water that can be used for irrigation, what a very insignificant portion of the land it irrigates, and how utterly impossible it is to raise trees, gardens, and grains without irrigation. Now, by referring to the rain-charts of this country, prepared by

Prof. Blodgett, it will be seen that in this portion of Dakota we have five inches less annual rain-fall than in Colorado, agreeing with our recorded reports, while they have the advantage of the proximity of the mountain belts that always furnish limited but unfailing streams.

We have seen by our tables, that in eight years there has been two, and perhaps three seasons, when farming might have been carried on in favorable locations, and five with a rain-fall like the present year, that will not permit of agriculture. And this, judging from the unchangeableness of natural laws, will be true in the future. In Michigan and Wisconsin, where the fire-scourge treats them so harshly, they have a rain-fall of thirty inches per annum, and in Iowa, Illinois, Indiana, Ohio, and New York, thirty-five and forty inches; while in the more southern States, fifty inches. (See U. S. Meteorological Rep.) Yet in these States it is seldom that there is too much rain. Notice the marked difference between these States and the desert, where, during five years out of the last eight, there has been but nine and one-half inches per annum. To describe the present year, is to describe them all, except the exceptionally wet ones. The diary of a single season, the impressions of a voyager who comes and is gone in a day, or the success of a single kitchen-garden, or the temporary growth of a few shade-trees—these incidents taken by themselves, and not in connection with like experiments in other seasons, can have but little real value in weighing this question. It is a problem that can not be demonstrated with mathematical completeness, and can be dealt with only by taking from the greatest number of examples the prevailing characteristics. In this manner we get probabilities amounting almost to certainties.

The prairies of Illinois can not be compared with these of the far distant West, for they are visited with abundant rains, and the trees are kept down by fires. But even the destitution of this neighborhood is made plenteous by comparison, for we have reports come up to us from far-off El

Paso, the other end of this same barren, rainless region, that they have not had a drop of rain for 365 days.

GEN. CUSTER'S OBSERVATIONS.

The "personal observations" of this country by Gen. Custer, at the time he wrote his letter, were confined to a single season, the summer of 1873, which had the greatest rain-fall ever recorded in the country, and about two and a half times as much as the average of 1867–1871 and 1874. Much of the soil being good, only lacking moisture, the rains of 1873 produced the same results they would anywhere else. Gen. Custer saw this, as did many others, and accurately described it. He could have seen one or, at the most, two other like seasons in Western Dakota in eight years. In Ohio, once in six or seven years, we have a drouth so great that the grasses die, and the meadows have to be newly seeded. To judge by one such example would be as good evidence that Ohio is a worthless country, as the experience of one year is that this is a good one. I will now take extracts from my own journal, for the same period this season, while coming from Fargo to Fort Buford, D. T., a distance of 425 miles—about as great a tract of land as the route observed by Gen. Custer last year:

"*August* 3. Left Fargo to-day at 8 A. M., traveling over two hundred miles. At Fargo, meridian 96° 20′, the vegetation is rank, crops abundant and good, about one-tenth injured by grasshoppers. The whole Red River valley is a dense meadow, with grass waist high. The people claim to have had showers every second day all the season, and vegetation justifies the statement. After coming westward sixty miles the grasses were shorter, and less rains for the summer were apparent. Continuing on to the James river, one hundred miles, about meridian 98½°, we found that stream a mere rivulet, the grass crisp and short, the country dried, and the people complained of no rains. The gardens about the station and military post were badly parched and pronounced failures. Passing on to Crystal

Springs, some thirty miles, the country continued parched, the grasses not more than one and a half inches high, and burned brown by the sun. Here was a small patch of about two acres plowed and planted, partly in a little valley, and the remainder on a low bluff. After passing half-way up the bluff, there was no longer any green thing visible. In the valley, the land gave promise to yield very little except potatoes. From this on to Bismarck, meridian 101°, it continues crisp and brown, without any running water, Apple creek, even, standing in stagnant pools. The patches about this place, where cultivation has been attempted, present a sickly, parched appearance, as if they would produce about a tenth of a crop, the people claiming it to be the work of grasshoppers; but they only preceded the drouth by a week. Looking through the town, I find but one shop where vegetables can be had, and these, poor and sickly, have been brought from the Red river, more than two hundred miles."

Proceeding by land to this post—Fort Buford—225 miles, there was one uninterrupted succession of brown, and sometimes yellow, earthern-colored hills. When approaching Bismarck, and some twelve miles from it, we saw haying-parties in the narrow ravines. But there was no hay that could be cut in the valley of Apple creek, and I was told there was none on Hart river. The grass was, in fact, as short in these narrow valleys as on the hills. After leaving the town, there were seen, at intervals of five or six miles, parties gathering hay for many miles up and down ravines so narrow, that often one and two swaths with the scythe would cut it all. There was no more bottom land where hay could be cut for twenty-five miles. At this distance, near the Missouri river, there were about a thousand acres It was in a basin, where the spring rains gather and keep the soil wet a long time. Here a large party were cutting hay. They will gather about four hundred tons, and hold it at starvation prices. There was no more grass that would do for cutting until we arrived within six miles of Fort Stevenson, where, by meandering up the narrow valleys

of Snake creek, from three to twenty yards wide, and some twelve miles long, hay is found. Some three hundred tons only were cut there. No other hay-grounds of importance were found for a hundred and thirty miles, until we reached the Buford hay-party, twenty miles from the post. During this entire distance of 325 miles, after crossing the 100° meridian, I only crossed four running streams, and they were so small that a single step would span them. The difference of the two seasons, '73 and '74, was most plainly shown by the growth of the grass. The grass of last season had been burned off, leaving only the stalks, too green to be consumed. These scattering stalks were standing two feet high all over the country, while the present year's growth was but from one to two inches, and both equally dry and crisp. Like this has been five of the last eight years, as may be seen by extracts from meteorological reports.

From the 15th of May to the 1st of August there were no rains in useful quantities in this section of the country. This has prevented the growth of grass for hay, except in a few very low places, and has made the raising of all small grains and early vegetables an entire failure. The grasshoppers about Bismarck consumed the early vegetation; but they only destroyed what the drouth would have done a few weeks later, and what it did do where the grasshoppers did not appear.

GEN. CUSTER'S STATEMENT UPON THE HAY SUPPLY.

My statement, that, in 1872, the small amount of hay required at this post compelled the contractor to search over an area of country embracing twelve hundred square miles, met with general contradictions. From Gen. Custer came the courteous and confident criticism, that he had: "Made careful inquiries of parties acquainted with the resources in this respect, and am convinced that hay in sufficient quantities to satisfy all probable demands (about 5,000 tons), of excellent quality, can be contracted for in the stack at a price not exceeding four dollars a ton."

The reader may judge as to the facts about hay by reference to the statement and letters bearing upon this subject for the present year, already given in these pages.

Let me record the results of the united efforts of men and nature in this vicinity in the way of vegetable growth. The grasses commenced growing about the 25th of April; but by May 15th, when about two inches high, it had already been checked by the drouth, nor did it grow more until the 1st of August, during which period there were, practically, no rains. At this time, and during the whole month of August, rains were ample, and the grass started up anew, giving the whole country the appearance of spring. But the cereals and many of the vegetables had perished. The experiments at farming had failed. Potatoes, however, and turnips, beets, cabbage, tomatoes, carrots—the root crop generally—and native Indian corn, came on finely, until, on the night of September 13th, a severe frost cut everything down. These late vegetables, here mentioned, with a few tomatoes which had commenced to turn, will be about a fourth of a crop. This is the third year we have tried to raise garden-truck, and this is our greatest success. In these notes of garden cultivation it may be said that melons have never ripened, though growing well. Occasionally there is found a hill of potatoes or a head of cabbage of remarkable growth and perfection; and these are the examples it has been the habit to exhibit at agricultural fairs in different parts of the country.

GEN. CUSTER'S EXPERIENCES.

Among "Gen. Custer's Experiences" is recorded one of a nap in the open air. This incident, common in a tropical climate, is mentioned by this officer to show that this really is a "banana region," as has been claimed. There is nothing at all improbable in that narration. And in the possibility of this nap out of doors, we have the very worst feature of the country—that is, its great and speedy changes of temperature; for the guide and interpreter of Fort Lincoln, who was with the General when he took that ground-

nap, says: "If he had tried it next day, he would have told a different story." The thermometer in this section is known to have varied seventy degrees in twelve hours. During the year it varies 150°; and from thirty to fifty days of the winter, it is below zero, reaching as low as 45°. Gen. Custer says the troops who were frozen were not properly clad. It might as well be said that all the people who lost their lives in the storm in Minnesota, in the winter of 1872, were carelessly or imperfectly clad. The troops are better and more warmly clad than citizens generally; but no people in ordinary life are prepared for such serious and sudden changes. For a complete confirmation of all I have said about the extreme cold of winter in this country, read Lewis and Clarke's narrative of the winter of 1804–5, which they passed at Fort Mandan, a station about fifty miles above Fort Lincoln. The mercury that winter was as low as 45 degrees. The winter of 1873–4 was the mildest known here for many years.

UNFOUNDED RUMORS.

By "unfounded rumors," it is presumed, is meant my own sources of knowledge of the country. As I have said elsewhere, I have passed six years of military service along this proposed line of road, in every State and Territory it touches. I have drawn my facts largely from the archives of the government, from the official reports of its officers, from its recorded tables of the rain-fall extending over a period of fifty years, from the reports of explorers from Lewis and Clarke down, and last of all, the report already given of the veteran General Sully, and many other well-known officers of the army, and citizens of known reliability. Such testimony is not usually classed as "unfounded rumor."

Every intelligent man in the country knows that there is not a farm between the valley of the Red river and the Rocky Mountains. The little patches about Bismarck, which have failed so signally this season, can not be counted as farms. With the exception of an occasional wet season,

like that of 1873, there has never been raised in this country either wheat, American corn, oats, or vegetables, except a few kinds. Some potatoes, other roots, and a little native Indian corn will be raised this year, as they probably can be in favorable spots every year; but no small grains, to any extent, of any kind. The growth of fruit has never been tried.

VIEWS OF OTHER PERSONS.

Gen. Custer, in a vague way, says that the officers who were with him on the Yellowstone expedition, were prepared to substantiate his expressed views of that country. The voluntary statements of very many of them, whom I have met incidentally since that time, fail to confirm his views, but quite to the contrary, oppose them. Gen. Custer can have no doubt of the opposite opinions of the *Tribune* correspondent, who was with him, for that clear-sighted gentleman expressed himself unequivocally.

Capt. Charles E. Clarke, of the 17th Infantry, a brother of Grace Greenwood, and a most estimable man, who has been stationed in this country, near Fort Lincoln, several years longer than either Gen. Custer or myself, informs me that although the military posts in this vicinity have tried to make gardens each year in the country, yet they have never succeeded, except in the two years of 1872 and 1873.

Grains, vegetables, and, I have no doubt, fruits grow luxuriantly in the narrow valleys of Montana, west of the mountains. No one has tried them east of the mountains in that Territory.

MILITARY MEANING OF TERMS.

As has been before remarked, the reader should not misunderstand what a military man means by plenty of grass, wood, and water. In 1866 I went across the country with my own teams, with a guard of twenty-five men, leaving Omaha in July, and arriving at Sacramento, California, in November, traveling by the way of Wyoming, Montana,

Idaho, Utah, and Nevada. In all that time I passed but one night without an "abundance of wood, grass, and water"—that is, for my military needs; yet I reported to the government, on my return, as follows:

REPORT CROSSING THE COUNTRY.

"For about two hundred miles after leaving Omaha, the soil of the Platte valley is highly productive. At about that point, the soil begins to become weak and thin. The atmosphere is dry, and continues so all the way to the divide of the Rocky Mountains, and to the west of them in Montana, Idaho, and Utah. Of this entire country, one-half may be considered of no value. Of the other half, about one-tenth has as much value for pastoral purposes as good grazing land in the Northern States, and of this last half, one acre in a thousand can be made abundantly productive by irrigation, and in no other way. These last points are to be found near springs under mountains, or on the immediate borders of Sun, Jefferson, Madison, Gallatin, and a few other streams, and at the western foot of the Wasatch mountains, now occupied by the Mormons. Three-fourths of the country passed over is mountain, the sides of a small proportion being covered with pine, and the streams bordered with cottonwood. Whatever mineral wealth the country contains, can only be known when developed. The precious metals, as now produced, are damaging to the country at large, as they divert much more capital and labor than finds profitable employment. The country has little value, and can only be sold by the government at nominal rates, and insufficient to pay the cost of surveying. It will in time be settled by a thinly scattered pastoral population. No amount of railroads, schemes of colonization, or government encouragement, can make more of it.

"As to the troops on the Upper Missouri, I am of the opinion the posts should all be broken up. They are very remote, and supplied at great expense. They give little protection to the navigation of the river, and can never form nuclei of colonization, because of the utter poverty

of the country. Then, if detachments of a few companies were sent up the river with the earliest navigation, to return with the latest, I would consider the river much more advantageously occupied than at present, besides releasing large numbers of troops for more active operations.

"By reason of the great number of small posts, more than half the military force is exhausted in taking care of them." Ex. Doc. No. 45, 39th Congress, 2d Session.

In the journey above referred to, my route was across the country and water-courses, not threading up the course of the stream, thus making my facilities the best possible for becoming familiar with the character of the land.

In crossing the region of country from the Big Horn river to Fort Benton, it carried me over the proposed route of the Northern Pacific R. R., about ten miles below the mouth of Bion's Fork. "I found the right valley of the Yellowstone about two miles broad, the mile farthest from the river being rather high and covered with sage. Then came a strip of good grass, and near the water a fine growth of cottonwood, the best I ever saw. Sometimes the grass and then the wood strip would occupy the greater part of the lower bank near the river. On the left bank we came at once to a clayey side hill with no vegetation of any kind. The different character of the banks, as above given, often shifted from side to side in passing along the river. We reached the Muscleshell, a distance of forty-five miles in a day and a half, finding water in but one place on our route, and that was strongly impregnated with the urine of the buffalo. The country was dried up, and the Muscleshell, as well as the Yellowwater, one of its main branches, were stationary bodies of water, about knee deep. The waters were of a whitish, stagnant appearance, bordered by an extremely meager soil, with quite a breadth of a poor sort of second-growth cottonwood. We had no grain at all for our animals, yet we found grass to take us through to Benton."

I have spent nearly all the eight intervening years in

this interior country, and it has all tended to strengthen my opinion then formed, and I believe my report not exaggerated.

LEWIS AND CLARKE'S NARRATIVE.

Lewis and Clarke, in their narrative, vol. 1, p. 253, writing from the Falls of the Missouri, say: "The country exhibits its usual appearances, the timber being confined to the river; while back from it, on both sides, as far as the eye can reach, it is entirely destitute of trees and bushes." Excepting some mountainous tracts, this remark can, in general terms, be applied to all this great interior country. And on page 316, it again says, at the head waters of the Jefferson: "From the top of this eminence I could discover but three trees in this whole country." They confirm, so far as their observations gave them the opportunity, all I have said about the cold of winter, the character and narrow dimensions of the Missouri valley, and also of the rain-fall. On pages 171 and 207, it will be seen that they only had one shower of rain from October 15, 1804, until May 28, 1805. Their narrative states particularly the almost total absence of timber, except on the mountains, until they reached the Sierra Nevada or Cascade range.

In passing on from the Missouri to the Sierras, they repeat the same story, of alternating heat,—cold, mountainous, timberless country, with wild sage, cactus, briars, drouth, alkali, and utter barrenness. To this are made a few notable exceptions, the principal being the valley of the Koos-koos-kie.

All persons having an interest in this region, should read the record of this remarkable expedition. It was written with no other intent than to convey exact information, fifty years before any other interest was dreamed of, and, with some few inaccuracies, is the most complete and truthful account of the general features and character of this region in print.

NEED FOR CORRECT INFORMATION OF THIS COUNTRY.

It is of vast importance that the true character of this country be made known. Every wet season, like the last, brings great numbers of immigrants west of the productive line, who finally have to return with great loss and discouragement, as has been seen in Kansas during the present season. It is not strange that the steadily moving wave of immigration, which has gone westward uninterruptedly for a hundred years, should have gathered an impetus that is now carrying it beyond the line of productiveness; but it has reached its outposts, and should be warned to halt, and not encouraged to go farther.

BAD LANDS.

During this discussion I have made no reference to what is technically called "bad lands," which comprise a large extent of the Upper Missouri country. This region is deeply cut by the rains, forming a continuation of clayey hills and ravines. It is merely a sloping cross section of the drift of this region, worn by the winds and rains into barren mounds of all shapes, along these cuts made by the water. By going up the ravines a mile or two, you invariably gain the bad table-lands. By substituting rocks for clay, we find large stretches of this kind of country in every Territory of the West. It has nothing whatever to do with the rain-fall, however, which controls this question of agriculture.

ISOTHERMAL LINES.

The isothermal lines upon the maps of Prof. Blodgett and Capt. Maury are correctly placed. I was led to pronounce them wrong, by supposing the Northern Pacific had used them. But a closer examination of the large map, compiled by the N. P. R. R. Co. in 1871, reveals the fact that they have placed their lines of the same temperature three degrees farther north than Blodgett. By suppressing the annual winter, spring, and autumn isothermals, using only the isothermal of the three summer months,

they show a summer isothermal of 70° at the intersection of the 104° meridian west longitude, with the 51° north latitude, while Blodgett puts the same line at 104° and 48°. By using only the summer isothermals, they show at this point a reading of 70° Fahr., while the annual isothermal of this point is 35° only. Upon scanning this map, unless one is especially familiar with these lines, he at once takes them for annual lines, such being the lines expected to be found, but called summer from their summer temperature. Whether so intended, they are well calculated to mislead.

On their large map, very conspicuously placed, will also be noticed the latitude of Paris, London, Hamburg, and Stockholm, as if to say, "See in what latitudes these great and wealthy people live." By examining the isothermals of Baron Von Humboldt and Prof. Dove, it will be seen that the annual isothermals of Northern Europe, from 14° to 50° Fahr., are all of them, in their range across North America, deflected southward from 13° to 18° of latitude. This is true, notwithstanding the line of excessive summer heat extending north and south, between 95° and 115° of west longitude, in our western country.

For the past three years, and in every month of each year except those of June, July, and August, the number of days the thermometer has fallen below 32° has been respectively 208, 208, 206.

WINTERING AMERICAN STOCK.

The statement that American stock does well in winter without other food than what nature provides, unaided by the care of man, so prominently noticed by Gen. Custer as one of the valuable features of the country, is a deception, as has always been such a report. I have sought for this locality so often told about, during these nineteen years, and although I have been at all the places mentioned, at none of them can stock be safely wintered out of doors. American stock will live under favorable circumstances, and in exceptionally mild winters, in this and in nearly all the Territories; but what wintering! Every few years a

storm will come that kills the greater part of the stock, while its quality constantly deteriorates, as is seen in Texas, which may be considered partially exceptional to this statement.

TREE CULTURE.

Gen. Custer has given an account of his success in tree culture during the past season, at Lincoln. Six hundred and twenty-seven cottonwood trees have been transplanted there, away from the river. Of these, it is true only eighty have died; but except in the very rainy summer of 1873, water has been constantly hauled from the Missouri river to irrigate them, and so long as this is done, the example is of no value, while the fact that this is necessary fully contradicts the theory that trees will grow on these plains. Across the Missouri at Bismarck, nine-tenths of the transplanted trees are dead. In the yard of Mr. Jno. Mason, who kindly invited me to inspect for myself, were forty-eight cottonwood trees. But one had green leaves, although he claimed vitality in five. Of twenty evergreens, all were dead. Of a dozen apple-trees, nearly all had green leaves, but showed no signs of growth; and of a promiscuous lot of other natives trees, all were dead.

The fact has been published that the St. Paul and Pacific Railroad Company have succeeded well in tree culture along their road. This entire road, however, is several hundred miles to the east of the hundredth meridian, where the rain-fall is ample.

PUBLICATION OF GEN. CUSTER'S LETTER, AND REFERENCE TO ITS STATEMENTS.

The time and place of publication of Gen. Custer's letter led many to believe it was written in the immediate interests of the Northern Pacific Railroad. In order that this whole question should be clearly understood, let me recapitulate. Gen. Custer indulges in a vein of personality, not called for by my letter, nor by ingenuous argument. Its statements, based upon the agricultural growth of last year, although true of that year, are none of them, except

with late garden vegetables, true of this year, and were not true of but two of the last eight years. It gave the world the example of the most anomalously wet season we have any accurate record of, as an average season by which the country could be judged.

It told what hay could be bought for at Lincoln—the fallacy of its intended argument being shown by their experience at that post the present year. It gave examples of gardens last year, where they have failed this year. It gave the success in tree-raising at Lincoln last year, when they are kept alive this year only by constantly hauling water to them. He says "the best lands of the Northern Pacific are east of the Missouri river." Gen. Sully answers his statement with regard to these lands.

He speaks of my want of ingenuousness in writing from a point away from the line of the railroad. He means it to be understood by the reader that I was writing from some point on the road itself. Had he looked upon the rain-charts, he would have seen that the rain-fall of the two places is identical, and would also have seen that the isothermal lines passing near Buford, pass southeastwardly from here, crossing the Northern Pacific near Lincoln, and turning eastward, keep to the south of that road, until they pass beyond its eastern terminus; and practically what is true here, is also true of all the section of country lying along the line of the road in Dakota. (See New York *Tribune* correspondent's letter.)

He has rawn from Prof. Hayden's Reports of Montana, but fails to find anything in it contradictory to my own statement. The pasture-lands there described are not agricultural lands, and Prof. Hayden always associates irrigation with agriculture.

In all this it is difficult to see where Gen. Custer's opportunities for knowing this country, as claimed by a portion of the Western press, were better than my own, or wherein he has refuted what so many others beside myself have asserted. He has said much in contradiction, and nothing in disproof.

CONCLUSION.

No country is known to be valuable, agriculturally, until it has proven itself to be so. This region in dispute has not given such evidence, for there is not, nor has there been, a farm, in the proper sense of the word, between the Red River valley and the Rocky Mountains.

This country has only one-third the rain-fall that, on an average, falls upon the productive portions of the United States.

Five out of the eight last years, the gardens, and the small agriculture at the Indian agencies and military posts in this country, have failed. Farming this year, the only one that has ever been tried, has failed.

The last year, the one upon which Gen. Custer's arguments are founded, was the most productive year in this section of which we have any accurate knowledge. This season, while in the growing months of May, June, July, and August, there fell in the Red River valley, meridian 96° and 97°, twelve inches of rain, there fell in Fort Lincoln, near the meridian 101°, but two and ninety-seven hundredths ($2\frac{97}{100}$) inches.

Prof. Blodgett says, as does all tradition, that this Upper Missouri country is too dry for agriculture. Experience, in the majority of cases, still confirms it; meteorological measurements confirm it; the correspondents with the Black Hills expedition confirm it; and the boundary commission confirms it.

Excepting the Yellowstone, which rises in the great central snow mountains, where do the Missouri, Columbia, Colorado, and Platte rivers find tributaries? The Missouri has no feeders from the mouth of the Niobrara to the junction of the Gallatin, Jefferson, and Madison, a distance of more than two thousand miles. In the drouth of summer it became a valley of standing pools, or the merest rivulets. This of itself establishes the impossibility of general agriculture, for in this parched land there can be no irrigation.

The stories of the "Tropical Belt," the "Continental Wheat Garden," the "Attractive Country," and a "climate and soil that will produce in abundance *all* the cereals and fruits of the Atlantic States," are puerile inventions of the late witness, literary stockholder, and literary agent of the Northern Pacific, aided by other writers of the country, employed and volunteer. If this scheme is knocked as high as he found his literary venture would be, a great good will have been accomplished. These writings have been repeated as lectures, and, by the extravagant use of money, have been published as advertisements, as editorial matter, as pamphlets, charts, maps, and books. They have been distributed by the car-load to every portion of the country. The sympathy and good-will of persons in high places have been sought and won in favor of this scheme.

A key to it all is given in this quotation, which most readers will remember:

"I come to you with a letter just mailed to Jay Cooke, advising him to secure your services as a platfrom speaker, to turn New England, Old England, or the great West upside down about our Northern Pacific.

(Signed,) "SAMUEL WILKINSON."

All this has been continued and animated through the instrumentality of that great moral power, the "*Independent*," for which services that leading Christian newspaper of the world was given a previously unheard-of compensation.

The wonder is that, in the presence of so great a failure, that there should still be found those to give further aid to this scheme. Its originators made a most melancholy mistake in their estimate of this country. In the presence of all the facts, their scheme has been wicked beyond the power of words to express, for it successfully appealed to the poor, the lowly, the widow, and the orphan, to loan their little hard-earned savings. This fraud was enacted with impressible artfulness, with high sounding promises, supported by the name of the national government. It was

proclaimed with pious pretenses of greater gains and surer pay than could be obtained from any other source.

Not the least of all these offenses was that of shameful waste, for of the vast sum of money which was spent, that part which went to build a railroad across an arid desert was as if thrown into the sea.

The Northern Pacific Railroad has taken up considerable space in these pages, because its partisans have continued to assert the value of these barren lands. But the truth, which can no longer be denied, is of far greater importance than the profit or loss from many railroads, serious as these interests may be.

There is a long line of territory, extending from the tropical heat of the Gulf of Mexico, in the south, to the regions of eternal ice in the north, where the tide of emigration must halt, or, passing over the barren lands, find homes on the shores of the Pacific.

Within the limits of that vast area of barren lands nature refuses to assist man in the cultivation of the ground. Year after year, with wonderful patience, industry, and endurance, the emigrant has struggled; and as one winter has followed another, cries of distress have gone forth to their brethren of the East and the West: "Give us bread, give us clothing, or we shall die."

In this region there are many years of famine, and none of plenty, so that provision for the future can never be made. Among the evils which visit it, is that of the plague of insects. Even to-day, as these words are written, there are many thousands of men, women, and children suffering from drouth and the devouring locusts. In their great poverty they ask the people of the productive States to send them help.

Their petition will not be made in vain; but it is time that one and all clearly understood the truth, that animal and vegetable life can not be sustained on these barren lands.

Hereafter, let emigration to these places known not to be arable, be emphatically discouraged. Happily, there is no

need to go so far to find so little. All over the United States, from the Atlantic ocean to the 100th meridian, and on the shores of the Pacific, there is arable land sufficient to supply all the wants of our people for a long while to come.

W. B. HAZEN.